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ITLE: Telomerase compositions and methods

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LAIMS:

What is claimed is:

1. A method of using a DNA segment that comprises an isolated gene associated with non-ciliate telomerase, wherein said DNA segment is characterized as encoding a polypeptide that includes a contiguous amino acid sequence of at least about 17 amino acids from SEQ ID NO:16, SEQ ID NO:18, SEQ ID NO:20, SEQ ID NO:22 or SEQ ID NO:24, or is characterized as specifically hybridizing to the nucleic acid segment of SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:19, SEQ ID NO:31 or SEQ ID NO:23, or the complement thereof, the method comprising the steps of:

(a) preparing a recombinant vector in which a non-ciliate telomerase-associated gene is positioned under the control of a promoter;

(b) introducing said recombinant vector into a recombinant host cell;

(c) culturing the recombinant host cell under conditions effective to allow expression of the telomerase-associated gene; and

(d) collecting the expressed gene product.

2. A method for modifying the telomerase activity of a cell, comprising contacting a

telomerase-containing cell with an amount of a composition effective to modify telomerase activity, said composition comprising:

(a) an isolated RNA segment of from 25 to about 1,500 nucleotides in length that comprises a non-ciliate telomerase RNA template, the RNA segment specifically hybridizing to the nucleic acid segment of SEQ ID NO:1 or the complement thereof under high stringency hybridization conditions; or

(b) an isolated telomerase-associated protein or polypeptide that includes a contiguous amino acid sequence of at least about twelve amino acids from SEQ ID NO:16, SEQ ID NO:18, SEQ ID NO:20, SEQ ID NO:22 or SEQ ID NO:24,

and assaying said cell for telomerase activity.

3. The method of claim 2, wherein said composition comprises:

(a) a nucleic acid segment that includes the DNA sequence of SEQ ID NO: 1; or (b) a nucleic acid segment that includes the contiguous DNA sequence from position 54 to position 1799 of SEQ ID NO:29, the contiguous DNA sequence from position 78 to position 1094 of SEQ ID NO:30, the contiguous DNA sequence from position 2 to position 2368 of SEQ ID NO: 19, the contiguous DNA sequence from position 55 to position 699 of SEQ ID NO:31, or the contiguous DNA sequence from position 3 to position 1955 of SEQ ID NO:23.

4. The method of claim 2, wherein said telomerase-containing cell is a human cell.

5. The method of claim 2, wherein said telomerase-containing cell is a sperm cell.

6. The method of claim 2, wherein said telomerase-containing cell is an egg cell.

7. The method of claim 2, wherein said telomerase-containing cell is a tumor cell.

8. The method of claim 2, wherein said telomerase-containing cell is a pathogenic cell.

9. The method of claim 2, wherein said telomerase-containing cell is located within an animal and a pharmaceutically acceptable formulation of said composition is administered to said animal.

10. A method for modifying the viability a cell with increased age, comprising contacting a telomerase-containing cell with an amount of a composition effective to modify telomerase activity, said composition comprising:

(a) an isolated RNA segment of from 25 to about 1,500 nucleotides in length that comprises a non-ciliate telomerase RNA template, the RNA segment specifically hybridizing to the nucleic acid segment of SEQ ID NO:1 or the complement thereof under high stringency hybridization conditions; or

(b) an isolated telomerase-associated protein or polypeptide that includes a contiguous amino acid sequence of at least about twelve amino acids from SEQ ID NO:16, SEQ ID NO:18, SEQ ID NO:20, SEQ ID NO:22 or SEQ ID NO:24.